Course Outline

Code: EDU747
Title: Teaching Junior Secondary Mathematics

School: Education
Teaching Session: Semester 1
Year: 2020
Course Coordinator: Dr Margaret Marshman Email: mmarshma@usc.edu.au
Course Moderator: Assoc. Prof Deborah Heck Email: dheck@usc.edu.au

Please go to the USC website for up to date information on the teaching sessions and campuses where this course is usually offered

1. What is this course about?

1.1 Description

This course builds capacity to design and discern effective pedagogy within Mathematics for Years 7 -10. You organise and plan lessons using the Australian Curriculum for Mathematics, apply your knowledge, understanding and skills to interpret, evaluate and adapt learning, in order to engage Junior Secondary students. You will develop deep knowledge of how to integrate Aboriginal and Torres Strait Islander perspectives into learning activities and critically reflect on your developing teaching practice.

1.2 Field trips, WIL placements or activities required by professional accreditation

Activity	Details
NA	n/a

1.3 Course topics

- Australian Curriculum: Mathematics – content and proficiency strands
- Concepts, principles and structure of Mathematics pedagogy and content for Years 7 – 10
- Linking learning theory with practice through lesson planning and assessment design to support and extend learner's understanding in Mathematics
- Critically review research relating to cognition, culture, inclusion and equity, and consider the implications for practice
- Differentiation of curriculum, interdisciplinary approaches, differences in experiences of students, language use and transition from Primary schooling
- Relationship between Mathematics, numeracy, and literacy
- Assessment, feedback and reporting in Mathematics, including NAPLAN
- ICT applications in teaching, learning and communication with parents and carers

2. What level is this course?

700 level Specialised - Demonstrating a specialised body of knowledge and set of skills for professional practice or further learning. Advanced application of knowledge and skills in unfamiliar contexts

3. What is the unit value of this course?

12 units

4. How does this course contribute to my learning?

Specific Learning Outcomes The specific learning outcomes that you will achieve by successful completion of this course:	**Assessment Tasks** You will be assessed on the learning outcome in task/s:	**Graduate Qualities or Professional Standards mapping** Completing these tasks successfully will contribute to you becoming:
Apply a deep synthesised knowledge of Australian Curriculum, Year 7 – 10 mathematical content and pedagogies for inclusion, engagement and behaviour management to create engaging learning sequences in Mathematics	Task 1 Task 2	Knowledgeable. Creative and critical thinkers.
Apply a deep knowledge of mathematical ideas, higher order thinking skills and inquiry-based pedagogies to design classroom activities for year 7 – 10 secondary learners	Task 1 Task 2	Creative and critical thinkers.
Demonstrate a deep understanding of diverse student learning needs and adopt an ethical student-centred approach to teaching and assessment in Mathematics	Task 1 Task 2 Task 3	Knowledgeable. Ethical.
Demonstrate a critical understanding of the relevant issues and strategies available and justify the safe, responsible and ethical use of ICT in learning and teaching.	Task 2 Task 3	Creative and critical thinkers.

Students may attend combined lectures with ED315, AE304 and SE303 undergraduate students. These parallel course deliveries are designed to give students access to expert lecturers. However, postgraduate courses may have additional or separate assessment tasks with appropriate criteria that acknowledge the different expectations, learning outcomes, prior knowledge and life experience of a student undertaking an AQF Level 9 program.

5. Am I eligible to enrol in this course?

Refer to the USC Glossary of terms for definitions of "pre-requisites, co-requisites and anti-requisites".

5.1 Enrolment restrictions

This course is offered to students enrolled in the program ED706 Master of Teaching (Secondary) who have a Mathematics teaching area.

5.2 Pre-requisites

Nil

5.3 Co-requisites

Nil

5.4 Anti-requisites

Nil

5.5 Specific assumed prior knowledge and skills (where applicable)

Nil

6. How am I going to be assessed?

6.1 Grading scale

Standard – High Distinction (HD), Distinction (DN), Credit (CR), Pass (PS), Fail (FL)

6.2 Assessment tasks

Task No.	Assessment Product	Individual or Group	Weighting %	What is the duration / length?	When should I submit?	Where should I submit it?
1a	Written Piece	Group	10%	500-words	Friday 4pm Week 3	Online Assignment Submission with Plagiarism check
1b	Oral	Group	0%	15 - 20 minutes	Weeks 4 & 5	In Class
1c	Written Piece	Individual	25%	1500 words	The week following teaching	Online Assignment Submission with Plagiarism check
2	Written Piece	Individual	30%	2000-2500 words	Friday 4pm Week 8	Online Assignment Submission with Plagiarism check
3	Examination	Individual	35%	90 minutes	Week 10	In Class
			100%			

Assessment Task 1: a. Lesson Plan, b. Teaching segment, c. Reflection & adapted lesson plan

Goal:	The goal of this task is for you to develop your ability to (1a) prepare a Mathematics lesson appropriate for the full range of student abilities, (1b) teach a segment of the lesson to peers and then (1c) reflect and adapt the lesson plan for future use.
Product:	Oral and Written Piece
Format:	An inquiry or problem-based lesson plan addressing a new mathematical concept. A team-teaching segment of the lesson will be taught during the tutorial and an individual reflection and adaptation of the lesson plan. a. In groups of two, you are required to develop an inquiry or problem-based, 70-minute lesson plan for a Year 7 – 10 secondary class of 25 students addressing a new mathematical concept. The lesson plan requirements will be provided on blackboard. Your group must submit your lesson plan in week 3 to Blackboard. b. Then team teach a 15 - 20-minute segment with the same person with whom you collaborated to create the lesson plan. The teaching sequence will be video-recorded. c. You will use this video to reflect as a group on your teaching performance using the critical moment protocols discussed in lectures. You may include peer reflections from the lesson also. You will then write a personal reflection, revise the lesson plan in response to your reflection and upload your reflection and revised lesson plan to Blackboard.
Criteria:	1. Deep knowledge and understanding of Mathematics, Mathematics curriculum, teaching and learning applied in lesson planning. 2. Reflection and evaluation of lesson plan using the literature. 3. Written communication and academic literacies including English expression grammar, spelling, punctuation, APA referencing conventions.

Generic skill assessed	Skill assessment level
Information literacy	Specialised
Communication	Specialised

Assessment Task 2: Case study: responding to diagnostic assessment

Goal:	The goal of this task is to demonstrate your junior mathematics content and curriculum knowledge through the design of a teaching and learning sequence in response to NAPLAN data and diagnostic assessment.
Product:	Written Piece
Format:	You are a Year 8 mathematics teacher. The HOD has provided a common diagnostic task and the Year 7 NAPLAN data for the students in your class. You are to: • Analyse the task and identify the mathematical concept(s). • Develop an A standard response to the sample task and identify the important features of this response. • Research common misconceptions and/or difficulties about this mathematical concept. Give specific examples of the characteristics of possible student response(s) for the misconception(s) you have described. • Then analyse the year 7 NAPLAN data provided to identify the misconceptions in the particular area of mathematics of your diagnostic task connected to your class of students. • Describe the sequence of teaching and learning strategies that you will use in the following three lessons assuming that your students present you with a variety of responses to the task. One of the lessons must utilise an ICT resource. Include how you will assess whether the students have understood the lesson. Justify your pedagogical and assessment decision making using the curriculum and academic literature. Your justification should explain how the teaching and learning sequence engages students of varying abilities and characteristics in an achievable challenge for junior mathematics. Include explanations of mathematics content, pedagogy, teaching strategies, ICT, assessment, and literacy and numeracy as appropriate.
Criteria:	1. Application of knowledge of the *Australian Curriculum: Mathematics* to planning and assessment. 2. Application of appropriate mathematical content and pedagogical knowledge, ICT, literacy and numeracy, as appropriate to engage a diversity of students. 3. Interpretation of student assessment data that is evident in lesson planning. 4. Use of credible evidence and sources. 5. Written communication skills and academic literacies including English expression grammar, spelling, punctuation, APA referencing conventions.

Generic skill assessed	Skill assessment level
Applying technologies	Specialised
Collaboration	Specialised

Assessment Task 3: Examination

Goal:	The goal of this task is for you to demonstrate your deep knowledge and understanding of curriculum, pedagogy and assessment in relation to Mathematics in the Junior phase of secondary schooling
Product:	Examination
Format:	A 100-minute examination with short answer and scenario questions. You may bring in **two** A4 pages of notes. The following topics will be included: • Inquiry based/ problem-based teaching and learning in junior secondary Mathematics • Assessment (informal and formal, diagnostic, formative and summative and their application), reporting (to students and parents/carers) and feedback strategies in Mathematics • Strategies for differentiating teaching to meet the specific learning needs of student in Mathematics including Aboriginal and Torres Strait islander students • Ethical use of ICT strategies and resources in curriculum, assessment and reporting
Criteria:	1. Deep knowledge and understanding of teaching and learning strategies, concepts and processes in Mathematics. 2. Deep knowledge and understanding of assessment strategies, concepts and processes in Mathematics. 3. Knowledge of Junior Secondary learners. 4. Written communication skills and academic literacies including English expression grammar, spelling, punctuation, APA referencing conventions.

Generic skill assessed	**Skill assessment level**
Problem solving	Specialised
Applying technology	Specialised

7. Directed study hours

The directed study hours listed here are a portion of the workload for this course. A 12-unit course will have total of 150 learning hours which will include directed study hours (including online if required), self-directed learning and completion of assessable tasks. Directed study hours may vary by location. Student workload is calculated at 12.5 learning hours per one unit.

Location:	**Directed study hours for location:**
USC Sunshine Coast	2-hour lecture and 2-hour tutorial

7.1 Course content

Teaching Week / Module	**What key concepts/content will I learn?**	**What activities will I engage in to learn the concepts/content?**	
		Directed Study Activities	**Independent Study Activities**
Module 1 Weeks 1 - 3	How to teach mathematics in Years 7 – 10 using the ACM	Inquiry based pedagogies Exploring the *Australian Curriculum: Mathematics* (*ACM*) in Years 7 – 10 Lesson planning	Text chapters: 1, 2, 3, Further readings and activities see Blackboard

Module 2 Weeks 4-8	Curriculum design and teaching strategies in Mathematics	Inquiry based pedagogies Exploring the *Australian Curriculum: Mathematics* (*ACM*) in Years 7 – 10: Content, General Capabilities and Cross Curriculum Priorities – literacy, numeracy, ICT, ATSI perspectives The use of questioning to diagnose student thinking and identify misconceptions Developing inquiry-based activities Evaluating student data Exploring key reports, initiatives and policy in relation to mathematics Spatial thinking and reasoning Planning a sequence of learning activities that develop a mathematical concept Exploring number, algebra, measurement, geometry, statistics and probability content in relation to Years 7 – 10	Set text chapters: 4, 5, 7 - 11 Melbourne Declaration A Flying Start for QLD Children United in our pursuit of Excellence Keeping QLD Schools Safe QLD Closing the Gaps Report National Numeracy Review Report Towards a 10-year plan for STEM Further readings and activities see Blackboard
Module 3 Weeks 9 - 10	Assessment and reporting in Mathematics	Exploring different types of assessment, feedback, moderation, reporting in Mathematics Examining theories on the purpose of assessment 'of, for and as' learning in Mathematics	Set text chapters: 6, 16 Further readings and activities see Blackboard

Please note that the course activities may be subject to variation.

8. What resources do I need to undertake this course?

Please note that course information, including specific information of recommended readings, learning activities, resources, weekly readings, etc. are available on the course Blackboard site. Please log in as soon as possible.

8.1 Prescribed text(s)

Please note that you need to have regular access to the resource(s) listed below as they are required:

Author	Year	Title	Publisher
Goos, M., Stillman, G., Vale, V., Makar, K. Herbert, S. and Geiger, V.	2017	Teaching Secondary School Mathematics: Research and Practice for the 21st century. 2nd edn	Australia: Allen & Unwin

8.2 Specific requirements

Nil

9. Risk management

Health and safety risks have been assessed as low.

It is your responsibility as a student to review course material, search online, discuss with lecturers and peers, and understand the health and safety risks associated with your specific course of study. It is also your responsibility to familiarise yourself with the University's general health and safety principles by reviewing the online Health Safety and Wellbeing training module for students, and following the instructions of the University staff.

10. What administrative information is relevant to this course?

10.1 Assessment: Academic Integrity

Academic integrity is the ethical standard of university participation. It ensures that students graduate as a result of proving they are competent in their discipline. This is integral in maintaining the value of academic qualifications. Each industry has expectations and standards of the skills and knowledge within that discipline and these are reflected in assessment.

Academic integrity means that you do not engage in any activity that is considered to be academic fraud; including plagiarism, collusion or outsourcing any part of any assessment item to any other person. You are expected to be honest and ethical by completing all work yourself and indicating in your work which ideas and information were developed by you and which were taken from others. You cannot provide your assessment work to others. You are also expected to provide evidence of wide and critical reading, usually by using appropriate academic references.

In order to minimise incidents of academic fraud, this course may require that some of its assessment tasks, when submitted to Blackboard, are electronically checked through SafeAssign. This software allows for text comparisons to be made between your submitted assessment item and all other work that SafeAssign has access to.

10.2 Assessment: Additional requirements

Eligibility for Supplementary Assessment

Your eligibility for supplementary assessment in a course is dependent of the following conditions applying:

a) The final mark is in the percentage range 47% to 49.4%
b) The course is graded using the Standard Grading scale
c) You have not failed an assessment task in the course due to academic misconduct

10.3 Assessment: Submission penalties

Late submission of assessment tasks will be penalised at the following maximum rate:

- 5% (of the assessment task's identified value) per day for the first two days from the date identified as the due date for the assessment task.
- 10% (of the assessment task's identified value) for the third day
- 20% (of the assessment task's identified value) for the fourth day and subsequent days up to and including seven days from the date identified as the due date for the assessment task.
- A result of zero is awarded for an assessment task submitted after seven days from the date identified as the due date for the assessment task.

Weekdays and weekends are included in the calculation of days late.
To request an extension, you must contact your Course Coordinator and supply the required documentation to negotiate an outcome.

10.4 Study help

In the first instance, you should contact your tutor, then the Course Coordinator. Additional assistance is provided to all students through Academic Skills Advisers. To book an appointment or find a drop-in session go to Student Hub.

Contact Student Central for further assistance: +61 7 5430 2890 or studentcentral@usc.edu.au

10.5 Wellbeing Services

Student Wellbeing Support Staff are available to assist on a wide range of personal, academic, social and psychological matters to foster positive mental health and wellbeing for your success. Student Wellbeing is comprised of professionally qualified staff in counselling, health and disability Services.

Ability Advisers ensure equal access to all aspects of university life. If your studies are affected by a disability, mental health issue, learning disorder, injury or illness, or you are a primary carer for someone with a disability, AccessAbility Services can provide assistance, advocacy and reasonable academic adjustments.

To book an appointment with either service go to Student Hub, email studentwellbeing@usc.edu.au or accessability@usc.edu.au or call 07 5430 1226

10.6 Links to relevant University policy and procedures

For more information on Academic Learning & Teaching categories including:

- Assessment: Courses and Coursework Programs
- Review of Assessment and Final Grades
- Supplementary Assessment
- Administration of Central Examinations
- Deferred Examinations
- Student Academic Misconduct
- Students with a Disability

Visit the USC website:
http://www.usc.edu.au/explore/policies-and-procedures#academic-learning-and-teaching

10.7 General Enquiries

In person:

- **USC Sunshine Coast** - Student Central, Ground Floor, Building C, 90 Sippy Downs Drive, Sippy Downs
- **USC Moreton Bay** – Service Centre, Ground Floor, Foundation Building, Gympie Road, Petrie
- **USC SouthBank** - Student Central, Building A4 (SW1), 52 Merivale Street, South Brisbane
- **USC Gympie** - Student Central, 71 Cartwright Road, Gympie
- **USC Fraser Coast -** Student Central, Student Central, Building A, 161 Old Maryborough Rd, Hervey Bay
- **USC Caboolture -** Student Central, Level 1 Building J, Cnr Manley and Tallon Street, Caboolture

Tel: +61 7 5430 2890

Email: studentcentral@usc.edu.au

10.8 School Specific Information

The assessment tasks in this course support pre-service teachers to explicitly demonstrate the following Australian Professional Standards for Teachers (Graduate):

Assessment Task	Australian Professional Standards for Teachers (Graduate)
Task 1: Lesson Plan, Teaching Segment and Reflection	2.1 Demonstrate knowledge and understanding of the concepts, substance and structure of the content and teaching strategies of the teaching area. 2.2 Organise content into an effective learning and teaching sequence. 2.3 Use curriculum, assessment and reporting knowledge to design learning sequences and lesson plans. 3.1 Set learning goals that provide achievable challenges for students of varying abilities and characteristics. 3.2 Plan lesson sequences using knowledge of student learning, content and effective teaching strategies. 3.3 Include a range of teaching strategies. 4.1 Identify strategies to support inclusive student participation and engagement in classroom activities. 5.3 Demonstrate understanding of assessment moderation and its application to support consistent and comparable judgements of student learning. 5.4 Demonstrate the capacity to interpret student assessment data to evaluate student learning and modify teaching practice.
Task 2: Case study: responding to diagnostic assessment	2.1 Demonstrate knowledge and understanding of the concepts, substance and structure of the content and teaching strategies of the teaching area. 2.2 Organise content into an effective learning and teaching sequence. 2.3 Use curriculum, assessment and reporting knowledge to design learning sequences and lesson plans. 2.5 Know and understand literacy and numeracy teaching strategies and their application in teaching areas. 2.6 Implement teaching strategies for using ICT to expand curriculum learning opportunities for students. 3.2 Plan lesson sequences using knowledge of student learning, content and effective teaching strategies. 3.3 Include a range of teaching strategies. 3.4 Demonstrate knowledge of a range of resources, including ICT, that engage students in their learning. 4.1 Identify strategies to support inclusive student participation and engagement in classroom activities. 5.1 Demonstrate understanding of assessment strategies, including informal and formal, diagnostic, formative and summative approaches to assess student learning. 5.4 Demonstrate the capacity to interpret student assessment data to evaluate student learning and modify teaching practice.

Task 3: Examination	2.1 Demonstrate knowledge and understanding of the concepts, substance and structure of the content and teaching strategies of the teaching area. 2.2 Organise content into an effective learning and teaching sequence. 2.3 Use curriculum, assessment and reporting knowledge to design learning sequences and lesson plans. 2.4 Demonstrate broad knowledge of, understanding of and respect for Aboriginal and Torres Strait Islander histories, cultures and languages. 2.5 Know and understand literacy and numeracy teaching strategies and their application in teaching areas. 2.6 Implement teaching strategies for using ICT to expand curriculum learning opportunities for students. 3.1 Set learning goals that provide achievable challenges for students of varying abilities and characteristics. 3.4 Demonstrate knowledge of a range of resources, including ICT, that engage students in their learning. 4.1 Identify strategies to support inclusive student participation and engagement in classroom activities. 4.5 Demonstrate an understanding of the relevant issues and the strategies available to support the safe, responsible and ethical use of ICT in learning and teaching. 5.1 Demonstrate understanding of assessment strategies, including informal and formal, diagnostic, formative and summative approaches to assess student learning. 5.2 Demonstrate an understanding of the purpose of providing timely and appropriate feedback to students about their learning. 5.3 Demonstrate understanding of assessment moderation and its application to support consistent and comparable judgements of student learning.5.4 5.4 Demonstrate the capacity to interpret student assessment data to evaluate student learning and modify teaching practice

Overview of the Master of Teaching (Secondary) Program

Phase 1 - Orientation to the profession:

EDU764 Quality Teaching and Learning
EDU765 Professional Experience: Orientation to the Profession
First two curriculum courses

Phase 2 - Enhancing professional knowledge and skills:

EDU712 Diversity and Inclusion
EDU713 Individual Learner Needs
EDU715 Literacy and Numeracy across the Curriculum
EDU716 Aboriginal and Torres Strait Islander Perspectives in Teaching and Learning
EDU766 Assessing Learning
EDU714 Professional Experience: Managing Learning Environments
Second two curriculum courses

Phase 3 - Synthesis of professional knowledge in practice and research:

EDU717 Using Data for Learning
EDU718 Teacher as Researcher
EDU719 Teacher as Global Practitioner
EDU720 Professional Experience: The Professional Teacher